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VIA ELECTRONIC FILING

July 9, 2021

Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

**Re: Ortus Power Resources Colorado, LLC, Phantom Canyon Pumped-Storage Hydroelectric Project, FERC Project No. _____
Application for Preliminary Permit**

Dear Secretary Bose:

Pursuant to 18 C.F.R. §§ 4.32 and 4.81 of the Federal Energy Regulatory Commission's (FERC) regulations, enclosed for filing is Ortus Power Resources Colorado, LLC's (Ortus) Application for Preliminary Permit. The proposed Phantom Canyon Pumped-Storage Hydroelectric Project (Project) will be located in Fremont, Pueblo, and El Paso Counties, Colorado.

Ortus looks forward to working with FERC while pursuing this opportunity. If you have any questions regarding this submittal, please contact either the undersigned, or Peter A. Gish at 508-280-6910, peter@ortusclimate.com.

Respectfully submitted,

A handwritten signature in black ink that appears to read "Michael A. Swiger".
Michael A. Swiger

Counsel to Ortus Power Resources Colorado, LLC

Enclosure

cc: Mr. Frank Blackett, Regional Engineer, San Francisco Regional Office

**BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION
APPLICATION FOR PRELIMINARY PERMIT**

Phantom Canyon Pumped-Storage Hydroelectric Project
FERC Project No. _____

Ortus Power Resources Colorado, LLC
8 The Green
Suite #12570
Dover, DE 19901

July 9, 2021

Phantom Canyon Pumped-Storage Hydroelectric Project
Application for Preliminary Permit
July 9, 2021

Section 4.81 Requirements

Initial Statement

- A. Ortus Power Resources Colorado, LLC, a Delaware limited liability company, ("Applicant"), applies to the Federal Energy Regulatory Commission for a preliminary permit for the proposed Phantom Canyon Pumped-Storage Hydroelectric Project, as further described in the attached exhibits ("Project"). The application is made in order that the Applicant may secure and maintain priority of application for a license for the Project under Part I of the Federal Power Act while obtaining the data and performing the acts required to determine the feasibility of the Project and to support an application for a license.
- B. The Location of the Proposed Project is:
 - a. State: ***Colorado***
 - b. Counties: ***Fremont*** (*reservoirs, generation and transmission*), ***Pueblo*** (*transmission*), and ***El Paso*** (*transmission*)
 - c. Nearby town: ***Penrose***
 - d. Stream or other Body of Water: ***Off channel of the Arkansas River***
- C. The exact name, business address, and telephone number of the Applicant are:

Ortus Power Resources Colorado, LLC
8 The Green
Suite #12570
Dover, DE 19901
Attn: Peter A. Gish, peter@ortusclimate.com

The exact name, business address, and telephone number of each person authorized to act as agent for the Applicant in this application are:

Peter A. Gish
8 The Green
Suite #4411
Dover, DE 19901
Tel: +1 508.280.6910
Email: peter@ortusclimate.com

Ken Shewer
90 Riverside Drive, PHA
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Email: ken@ortusclimate.com

Michael A. Swiger, Esq.
Van Ness Feldman, LLP
1050 Thomas Jefferson Street, NW
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Tel: +1 202.298.1891
Email: mas@vnf.com

- D. Applicant is a Delaware limited liability company. As such, it is qualified under Section 4(e) of the Federal Power Act to apply for and hold a hydroelectric license under Part I of the Federal Power Act. Applicant is not claiming preference under Section 7(a) of the Federal Power Act.
- E. The proposed term of the requested permit is 48 months.
- F. Existing dam or other project facilities within the proposed Project area or immediately adjacent (neither is Federally owned or operated):

Brush Hollow Reservoir, owned and operated by:
Beaver Park Water Inc.
209 Broadway
P.O. Box 286
Penrose, CO 81240

The Brush Hollow Reservoir is not located within the bounds of the property for the proposed Project but occupies land adjacent to the lands for the Project.

Cedar Park Reservoir, owned and operated by:
PC Water, LLC
P.O. Box 75568
Colorado Springs, CO 80970-5568

The Cedar Park Reservoir is a small storage structure used to store irrigation water owned by PC Water, LLC, a Colorado limited liability company. This entity is related to the current ownership of the land rights for the Project and will consent to the transfer of this asset with the transfer of the land. The dam structures are planned for modification and/or removal during the proposed reservoir expansion. The enlarged lower reservoir will encompass an area that

either completely or partially overlays the current Cedar Park Reservoir pools.
The existing structures are not facilities of the Project proposal.

Section 4.32 Requirements

G. Applicant has or intends to obtain and will maintain any proprietary right necessary to construct, operate, and maintain the Project.

H. The following are the names and addresses of any counties in which any part of the Project may be located:

Fremont County
615 Macon Avenue
Canon City, CO 81212

Pueblo County
215 West 10th Street
Pueblo, CO 81003

El Paso County
27 East Vermijo Avenue
Colorado Springs, CO 80903-2208

I. The names and mailing addresses of every city, town, or similar political subdivision: (A) in which any part of the project and any Federal facility to be used by the Project is located; or (B) that has a population of 5,000 or more and is located within 15 miles of the Project are:

Canon City
P.O. Box 1460
28 Main Street
Canon City, CO 80215-1460

J. There are no irrigation or drainage districts, or similar special purpose districts in which any portion of the Project is located, or that owns, operates, maintains or uses any Project facilities.

K. The following are the names and mailing addresses of every other political subdivision in the general area that there is reason to believe would likely be interested in, or affected by the Project:

Penrose Water District
0340 Grant Avenue
Penrose, CO 81240

Upper Arkansas River Water Conservation District
339 East US Highway 50
Salida, CO 81201-2779

Lower Arkansas Valley Water Conservation District
801 Swink Avenue
Rocky Ford, CO 81067

Southeast Colorado Water Conservation District
31717 United Avenue
Pueblo, CO 81001-4817

The United States Army
Office of the Garrison Commander
Fort Carson, CO 80913-4143

Board of County Commissioners
Fremont County
615 Macon Avenue
Canon City, CO 81212

Board of County Commissioners
Pueblo County
215 West 10th Street
Pueblo, CO 81003

Board of County Commissioners
El Paso County
27 East Vermijo Avenue
Colorado Springs, CO 80903-2208

- L. There are no potentially affected Indian Tribes within 100 miles of the Project. For information, the names and mailing addresses of potentially interested Indian Tribes within 200 miles of the Project are:

Ute Mountain Ute Indian Tribe
P.O. Box 52
Towaoc, CO 81334

Southern Ute Indian Tribe
P.O. Box 737
Ignacio, CO 81337

Jicarilla Apache Nation
Building No. 25 Hawks Drive
Dulce, NM 87528

No other federally recognized Indian tribes exist within Colorado or within 500 river miles downstream of the Project on the Arkansas River. See:
<https://www.bia.gov/bia/ois/tribal-leaders-directory/>

Attestation

This application is executed in the:

State of NH

County of Merrimack

By:

Peter A. Gish
37 Rayton Road
Hanover, NH 03755

Being duly sworn, depose(s) and say(s) that the contents of this application are true to the best of his knowledge or belief. The undersigned applicant has signed the application this 8th day of July, 2021.



Subscribed and sworn to before me, a Notary Public of the State of New Hampshire this 8th day of July, 2021.


Karrie K. Finemore
Seal: NH NP
Exp. 10/3/23

Exhibit 1

General Description of Proposed Project

The Project is to be located primarily on privately-owned land consisting of approximately 4500 acres currently owned by one entity, PC Land, LLC which will be purchased pursuant to a Purchase and Sale Agreement executed between an affiliate of Applicant and the seller on April 30, 2020. This contiguous block of private land will support the upper and lower power reservoirs, the powerhouse and the penstock. Portions of the Project, consisting of a small section of the Raw Water Diversion and a portion of two of the potential pathways for interconnection (both transitioning the identical route at such location) are designed to cross, respectively, U.S. Bureau of Land Management ("BLM") land and a small segment of the U.S. military base at Fort Carson. An affiliate of Applicant also maintains the right to purchase perpetual rights of way across mainly private land associated with the proposed Raw Water Pipeline from the Arkansas River that will provide the pathway to acquire the initial fill and makeup water.

The project is a closed loop design, and off-channel from the Arkansas River and consists of the following components:

- i. Lower Reservoir – Approximately 17,436 acre-feet with a 322 acre surface area and a normal maximum surface elevation (mean sea level) of 5,630 feet.
- ii. Upper Reservoir – Approximately [9,100] acre-feet with a [93.8] acre surface area and a normal maximum elevation of [6,176] feet
- iii. Penstock – dual shaft surface level pipeline or (preferred subject to geotechnical study) dual concrete-lined tunnels.
- iv. Powerhouse – approximately 50,000 square foot structure containing four 125 MW reversible pump/turbine generators
- v. Water diversion – approximately 29,000' dedicated water pipeline (48-inch) running from what will be an upgraded Lester-Attebury ditch diversion across BLM land and private parcels along an 80' wide right of way to the proposed location of the Lower Reservoir. Affected Federal Land for this component of the Project Works entails an expansion and renovation of a poorly maintained existing diversion from the Arkansas River owned by a private entity, construction of a new intake, construction of a pump lift station and construction of a portion of the raw water pipeline to carry water from the diversion through the pumps and across the BLM land where it will continue on private land to the Lower Reservoir. These diversion works will primarily serve the proposed Project. Only improvements to the existing headgate of the ditch structure will benefit other parties.

- vi. Transmission – On site, a 230 kV substation to step up power to transmission voltage and then to one of three pathways: a) 230 kV transmission interconnection with (preferred) an existing Western Area Power Authority (“WAPA”) 230 kV transmission line that bisects the Project land involving no new transmission lines; or b) a newly constructed 230 kV feeder circuit following the existing WAPA corridor and connecting with the Midway Substation (secondary) approximately 28 miles away; or c) following the same pathway and connecting to the Nixon Substation approximately 32 miles away (tertiary).

Description of Facilities:

A. Dams (Approximate calculations based on preliminary designs)

a. Upper Reservoir

i. Main Dam

1. Length: 4,728'
2. Base Elevation: 5,988'
3. Crest Elevation: 6,190'
4. Dam Footprint Area: 655,890 sf
5. Physical Composition: Roller Compacted Concrete (“RCC”) gravity dam with integral overtopping stepped-spillway. RCC is armored with conventional concrete on upstream face and grout enriched RCC on downstream face.

b. Lower Reservoir

i. LR Saddle Dam #1

1. Length: 4,071'
2. Base Elevation: 5,590'
3. Crest Elevation: 5,654'
4. Dam Footprint Area: 957,000 sf
5. Physical Composition: Zoned Earthfill/Rockfill Embankment dam with impervious earthen core, upstream and downstream filter drain zones and earthfill and rockfill shell zones.

ii. LR Saddle Dam #2

1. Length: 2,104'
2. Base Elevation: 5,596'
3. Crest Elevation: 5,654'
4. Dam Footprint Area: 351,700 sf
5. Physical Composition: Zoned Earthfill/Rockfill Embankment dam with impervious earthen core, upstream and downstream filter drain zones and earthfill and rockfill shell zones.

iii. LR Saddle Dam #3

1. Length: 55'
2. Base Elevation: 5,646'

3. Crest Elevation: 5,654'
 4. Dam Footprint Area: 2,700 sf
 5. Physical Composition: Zoned Earthfill/Rockfill Embankment dam with impervious earthen core, upstream and downstream filter drain zones and earthfill and rockfill shell zones.
- iv. LR Main Dam
 1. Length: 2,638'
 2. Base Elevation: 5,522'
 3. Crest Elevation: 5,654'
 4. Dam Footprint Area: 942,900 sf
 5. Physical Composition: Zoned Earthfill/Rockfill Embankment dam with impervious earthen core, upstream and downstream filter drain zones and earthfill and rockfill shell zones.

B. Penstock or other Conduit

- a. Reservoir River Diversion Pipeline
 - i. Length: 29,000 feet +/-
 - ii. Diameter: 48"
 - iii. Composition: Concrete Reinforced Pipe
- b. Penstock
 - i. Length: 6,500 feet +/-
 - ii. Diameter: 18-20 foot diameter pipes (two separate pipes) steel if above ground, lined concrete if tunnels underground.
 - iii. Composition: Bifurcated twin steel pipes on the surface or concrete lined tunnel (preferred, subject to geotechnical analysis).

C. Power-House Description

- a. Number of Units: Four reversible generator/pump units
- b. Proposed Capacity: 500 MW
- c. Turbine/Pump Rating for each Unit: 133 MW / 2,700 cfs discharge capacity
- d. Generator Rating for each Unit: 125 MW

D. Estimated Annual Energy Output, Flow Rates, Reservoir Volumes and Elevations and Evaporation

- a. Proposed Capacity: 500 MW
- b. Estimated Average Annual Energy Output: 800,000 – 2,800,000 MWH
- c. For Each Generating Unit, Single Capacity Rating:
- d. Reservoir Information:
 - i. Upper Reservoir
 1. Surface Area: 98.6 Acres (4,200,000 square feet)
 2. Average Storage Capacity: 7,124 acre-feet
 3. Maximum Storage Capacity: 9,089 acre-feet
 4. Normal Maximum Elevation 6,184 feet
 - ii. Lower Reservoir

1. Surface Area: 322.2 Acres (13,800,000 square feet)
 2. Average Storage Capacity: 13,200 acre-feet
 3. Maximum Storage Capacity: 17,436 acre-feet
 4. Normal Maximum Elevation 5,630 feet
- iii. Estimated Hydraulic Head: 554 feet (gross)
 - iv. Existing or Proposed: Proposed

E. Proposed Transmission

- a. **Preferred transmission outflow corridor** will be the existing 230 kV WAPA line that bisects the site. Applicant is currently analyzing the economic viability of interconnection with this existing transmission resource.
- b. Secondary transmission pathway consists of a dedicated feeder circuit at 230 kV to the Midway substation (approximately 28 line-miles) and connection with the Xcel transmission and distribution network. Applicant intends to file for interconnection studies with Xcel in September 2021.
- c. Tertiary transmission pathway consists of a dedicated feeder circuit at 230 kV to the Nixon substation (approximately 33 line-miles) and connection with the Colorado Springs Utility (“CSU”) transmission and distribution network. Applicant has filed for interconnection studies with CSU and such studies are currently underway.

Transmission options (b) and (c) above will necessitate the construction of new, dedicated feeder circuits along the existing WAPA transmission corridor. This pathway crosses a portion of the Fort Carson military reserve and will therefore impact Federal lands.

All of the transmission options will require the construction of a project-owned bi-directional substation which will facilitate the transfer of electrical energy between the transmission lines and the Project. Substation will be designed during the Term of the Preliminary Permit and will be constructed consistent with IEEE specifications, applicable law and good industry practices. See Map 2 for the location of the substation.

The size of the project and nature of the facility (load balancing, ancillary service and capacity service) may require a transmission strategy that encompasses multiple of the options referenced above.

F. Applicant asserts that the proposed Project will develop, conserve and utilize the public interest or water resources of the region in the following manner:

- a. Integration of Renewable Resources – Colorado has experienced exponential growth in renewable energy generation on its grid over the last 20 years. In 2001, the Colorado grid was supplied by 97% fossil fuels and 3% renewables, of which all of the renewable energy was hydroelectric. By 2010, 7% of the state’s grid supply was intermittent wind and by 2020, the state had achieved a

renewable penetration of approximately 25% of total electricity produced. Almost all of that growth over the two decades was in the form of solar and wind energy. With ever-expanding renewable capacity needed to meet state RPS goals, the proposed Project will provide a significant integration resource in a strategic location to assist the state-wide utilities in balancing their load and supply and thus allow for more economic expansions of the renewable energy technologies than would be possible without the proposed Project.

- b. Grid Resource – In conjunction with the trend to increase renewable energy generation, the state of Colorado and the nation as a whole is undergoing a trend of the retirement of coal-fired power plants. These base-load generators had provided valuable grid services that are missing with the retirement of the plants. A pumped storage hydroelectric facility, especially one designed as the proposed Project with multiple fully-reversible pump/generators, brings significant replacement value to the capacity provided by the retiring coal plants which will enhance the stability of the grid, reduce the need for interstate transmission lines, and ultimately result in better rate-payer rates.

Exhibit 2

Study and Work Plan

- A. **Study Plan:** The proposed Project is located primarily on lands that have been studied for years for the purpose of designing a pumped hydro generation station or a water storage facility. Consequently, Applicant has acquired the knowledge of those prior activities for this new, redesigned and independently developed Project.

Several prior studies that have shown no negative impacts from the proposed Project include the following:

- Reservoir Project and Pumped Storage Reconnaissance Study
- Vegetation Mapping and Special-Status Plants Study
- Cultural Resources Preliminary Study
- Terrestrial Special-Status Wildlife Study
- Water and Aquatic Resources Study

During the Preliminary Permit Term, the Project plans to undertake the following studies, investigations and tests (each such test and updated study to commence within 12 months of the date hereof):

- Updated Vegetation Mapping and Special-Status Plants Study Plan
- Updated Cultural Resources Study Plan
- Updated Terrestrial Special-Status Wildlife Study Plan
- Updated Water and Aquatic Resources Study Plan
- Visual Resources Study Plan
- Noxious Weed Plan
- Geotechnical suitability analysis for Penstock tunneling
- Preliminary submergence design
- Computational fluid dynamics modeling of pumping/generating facility and intake/discharge pipeline
- Preliminary intake/discharge structure design review
- Preliminary substation/switchgear design review
- Interconnection facilities and system impact study

During the Term of the Preliminary Permit Applicant plans to consult with the following agencies in connection with the Project:

- Counties of Fremont, Pueblo and El Paso
- Cities of Canon City, Colorado Springs, Penrose and Pueblo
- Colorado Division of Parks and Wildlife
- Colorado Water Conservation Board
- U.S. Fish and Wildlife Service
- National Park Service

- U.S. Environmental Protection Agency
- U.S. Bureau of Land Management
- U.S. Department of Energy

No new roads will be built for purposes of conducting studies, investigations, and/or tests.

- B. Work plan for new dam construction: The Applicant will follow a work plan tied to the FERC's Dam Safety Division and Colorado's Dam Safety rules and regulations as set forth by the Colorado Division of Water Resources. The work plan focuses on developing an application package that meets all of the requirements associated with the Construction of a Jurisdictional Sized Dam or Reservoir including the coordination and creation of:
- a. Construction plans;
 - b. Construction specifications;
 - c. A hazard classification report;
 - d. A hydrology report;
 - e. A geotechnical report;
 - f. A design report;
 - g. An instrumentation plan; and
 - h. A cost estimate

No jurisdictional wetlands are within the dam footprint area and no waters or floodplains will be disturbed by any field studies, tests or other activities.

Due to the planned portion of Project that involves upgrading of the Lester-Attebury ditch structures and the construction of a raw water pipeline and pump lift station on BLM land, Applicant plans to undertake the necessary studies to apply for a FLPMA Permit with BLM and a Clean Water Act 404 Permit with the U.S. Army Corps of Engineers. The studies, designs, and applications associated with such permit filings are planned for the first 18 months of the Term of the Preliminary Permit and will proceed in parallel with any environmental activities associated with studies under Section A, above.

- C. Costs and Financing: Applicant has spent approximately \$500,000 thus far to develop the Project and estimates the costs for carrying out and preparing additional studies, surveys, investigations and other activities necessary to complete the feasibility investigations and to prepare a license application to be between \$5M and \$7M. These expected costs can be broken down as follows:
- a. \$.5M for the environmental investigations
 - b. \$1.0M for geotechnical and hydrology investigations
 - c. \$2.0M-\$3.0M for detailed engineering of dams, penstocks and the powerhouse
 - d. \$.75M for interconnection studies
 - e. \$1.5M for consultants and other overhead

Applicant and its private investors will provide 100 percent of the funds necessary to take the Project through the completion of construction.

D. Work Plan Schedule:

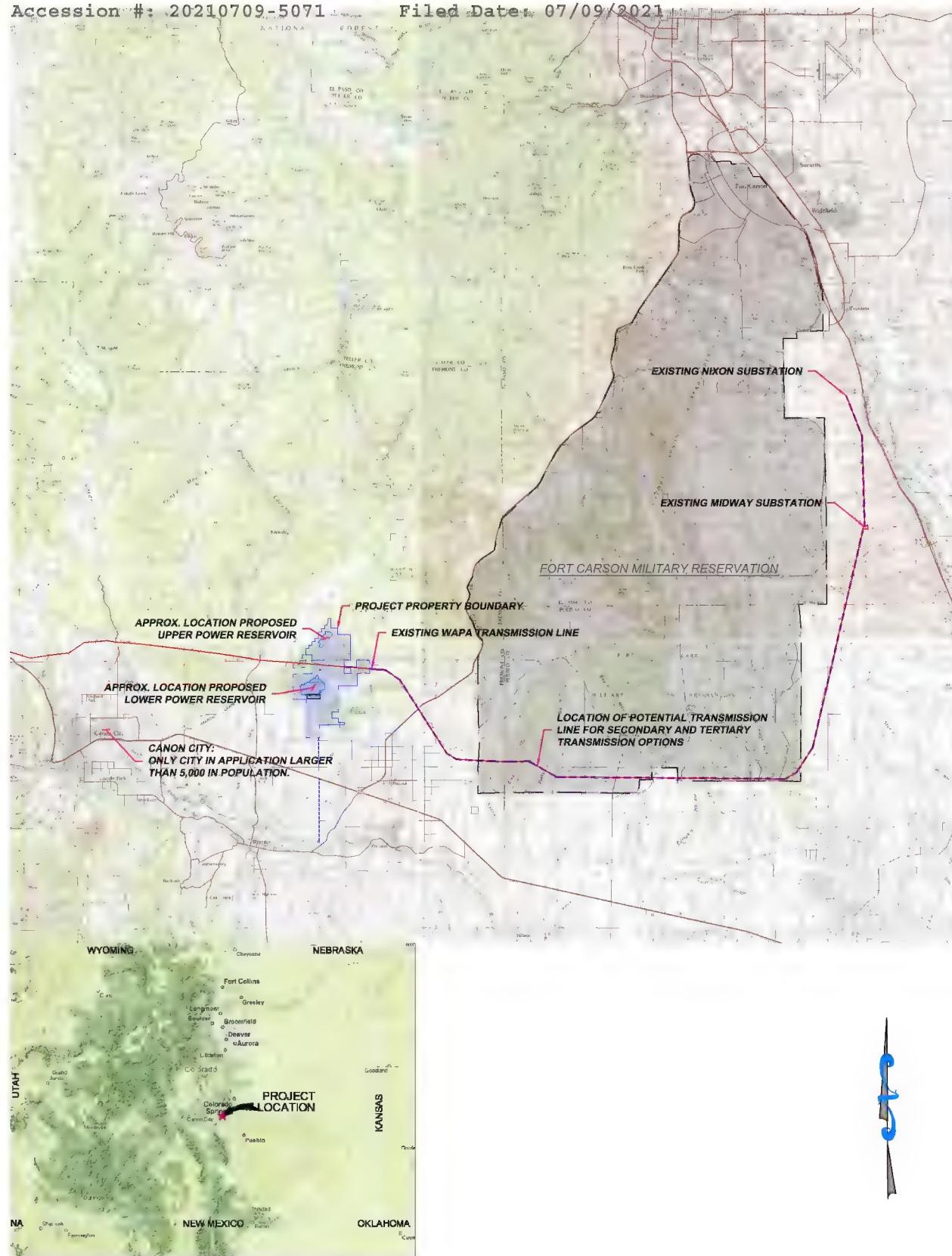
YEAR	DESCRIPTION OF ACTIVITIES
Year 1	<ul style="list-style-type: none"> • Updated Vegetation Mapping and Special-Status Plants Study Plan • Updated Cultural Resources Study Plan • Updated Terrestrial Special-Status Wildlife Study Plan • Updated Water and Aquatic Resources Study Plan • Visual Resources Study Plan • Noxious Weed Plan • Geotechnical suitability analysis for Penstock tunneling • Interconnection Facilities and System Impact Study • Pursue Diversion Upgrade permitting (FLIPMA permit for pump station construction and 404 Permit for intake construction)
Year 2	<ul style="list-style-type: none"> • Commercial Negotiations with off-takers • Preliminary submergence design • Computational fluid dynamics modeling of pumping/generating facility and intake/discharge pipeline • Preliminary intake/discharge structure design review • Preliminary substation/switchgear design review
Year 3	<ul style="list-style-type: none"> • Commercial Negotiations with off-takers • Create Construction Plans • Procurement • Commence Final Design • Local Permits • Submit License Application
Year 4	<ul style="list-style-type: none"> • Finalize Construction Plan • Receive FERC License

Exhibit 3

Required Maps

Index to Maps:

- Map 1 – Project Overview including interconnection pathway
- Map 2 – Project Features
- Map 3 – Optional Interconnection Pathway and Project Area
- Map 4 – Proposed Project Works on BLM land
- Map 5 - Project Area Affecting BLM Land
- Map 6 – Parcels and Owners of Affected Lands adjacent to Project Area



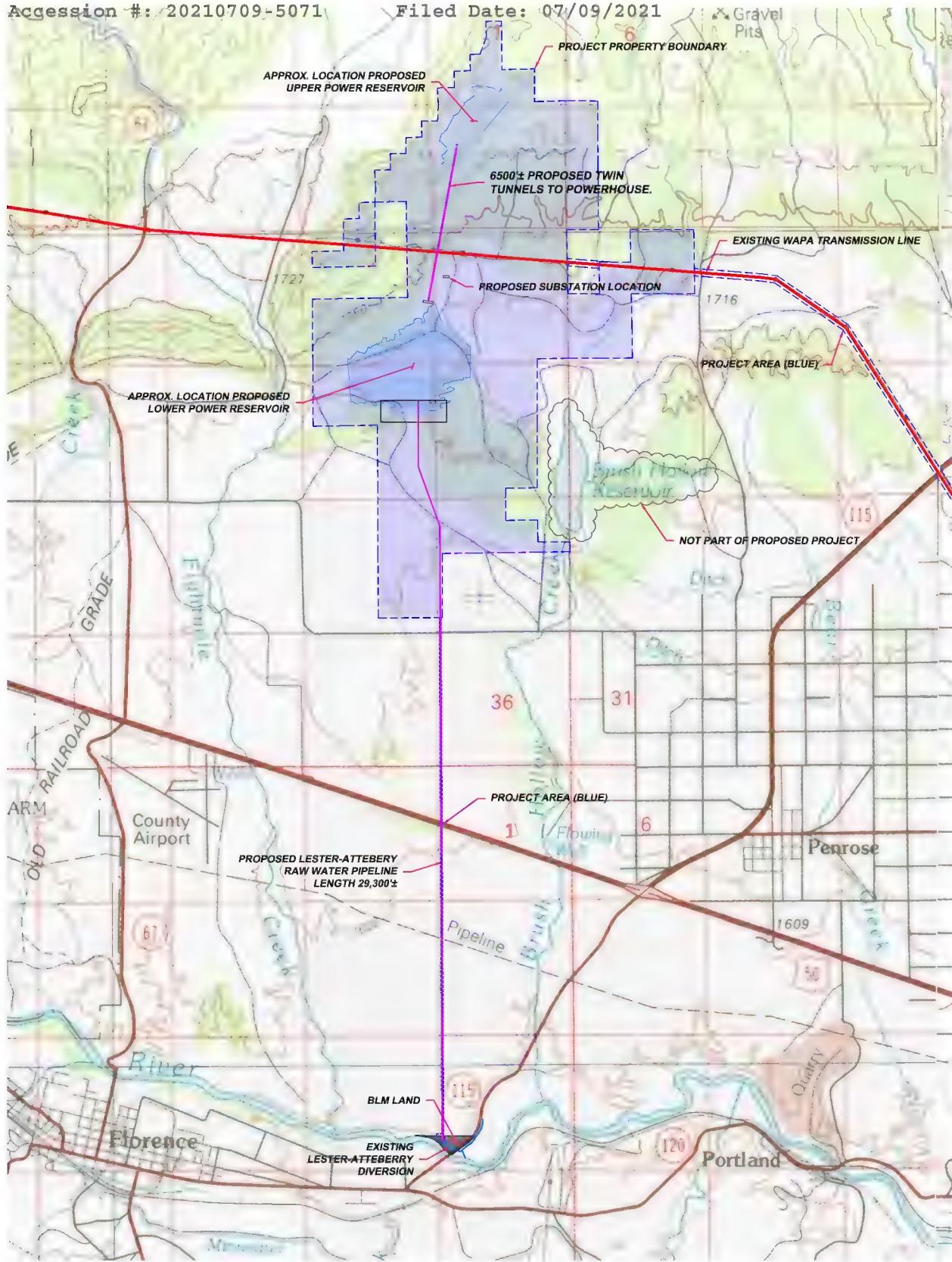
PHANTOM CANYON PUMPED STORAGE HYDROELECTRIC PROJECT

ORTUS POWER RESOURCES COLORADO, LLC

EXHIBIT 3 MAP 1 PROJECT OVERVIEW

PROJECT NAME:	FILE NAME:	SCALE:	REVISED:	FIGURE NUMBER:
PCPSHP	Exhibit 3 R2 v2013.dwg	NTS	07/08/2021	1 of 5

Gravel
Pits

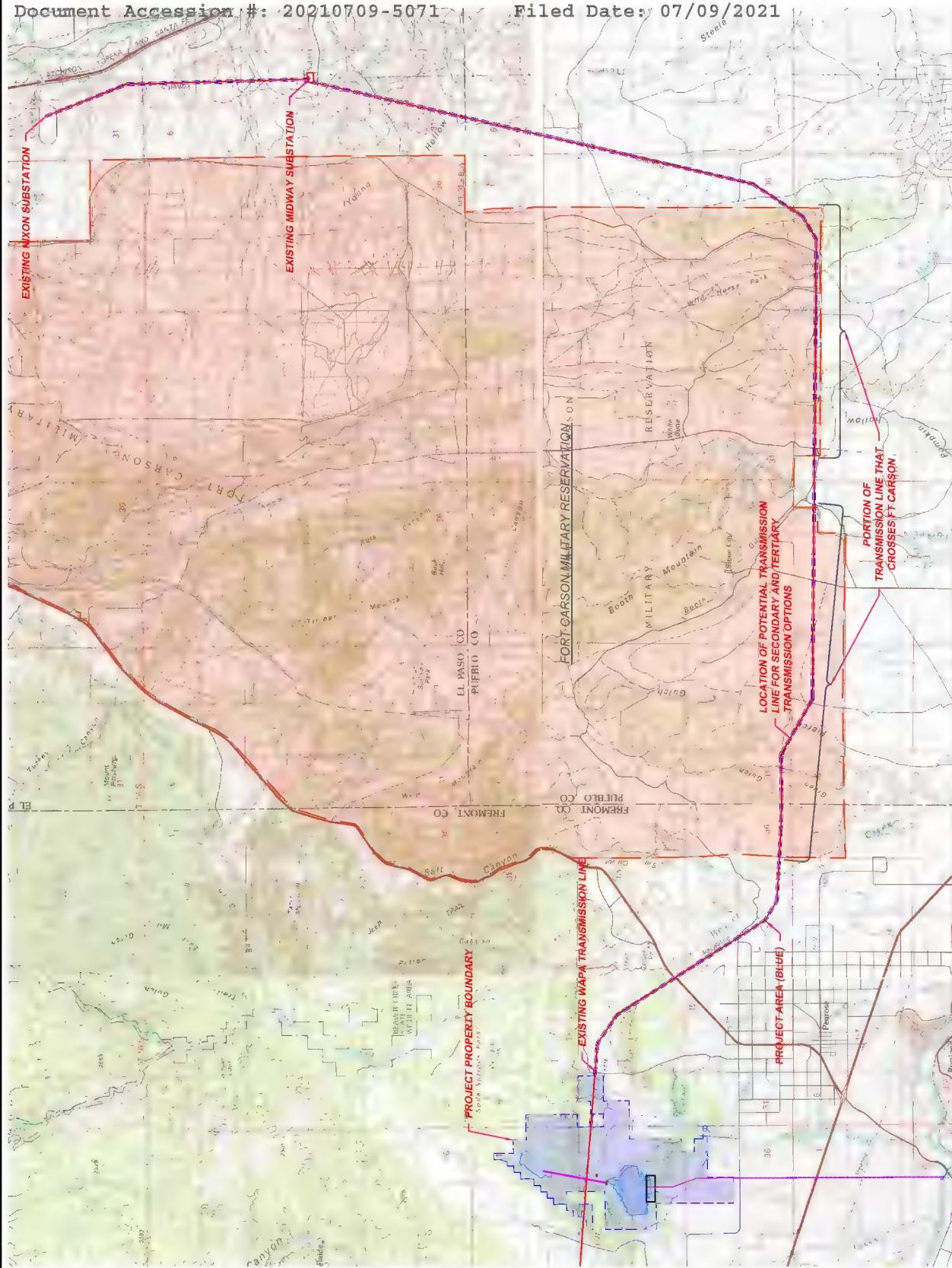


PHANTOM CANYON PUMPED STORAGE HYDROELECTRIC PROJECT

ORTUS POWER RESOURCES COLORADO, LLC

**EXHIBIT 3
MAP 2**

PROJECT NAME: PCPSHP	FILE NAME: Exhibit 3 R2 v2013.dwg	SCALE: NTS	REVISED: 07/08/2021	FIGURE NUMBER: 2 of 5
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PHANTOM CANYON PUMPED STORAGE HYDROELECTRIC PROJECT

ORTUS POWER RESOURCES COLORADO, LLC

EXHIBIT 3 MAP 3 TRANSMISSION CORRIDOR

PROJECT
NAME:
PCPSHP

FILE
NAME:
Exhibit 3 R2 v2013.dwg

SCALE:

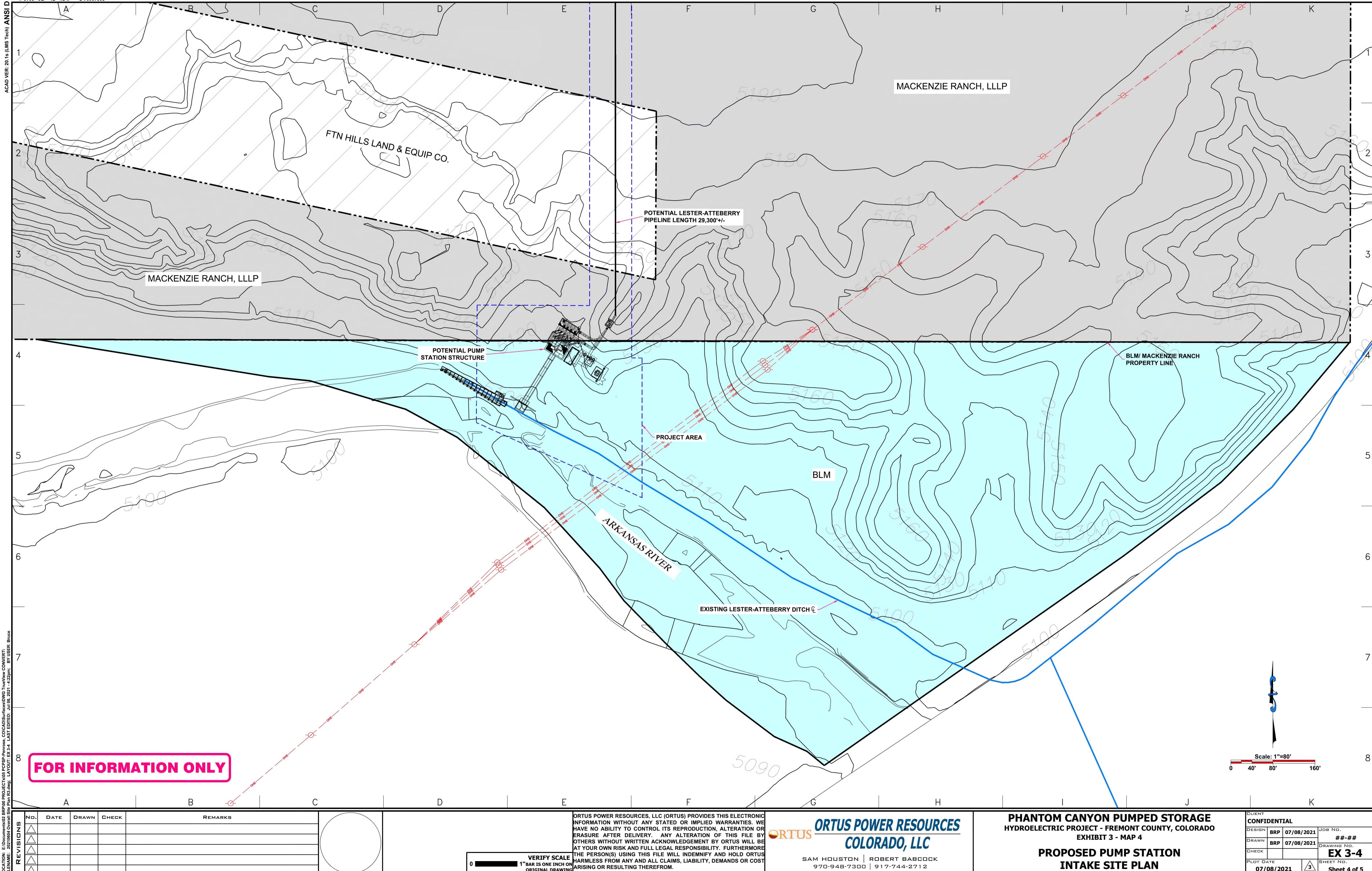
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REVISED:

07/08/2021

FIGURE NUMBER:

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